W hite paper

T650

Design that you want to touch

Preface

Purpose of this document

This White paper will be published in several revisions as the phone is developed. Therefore, some of the headings and tables in this document contain limited information. Additional information and facts will be forthcoming in later revisions.

The aim of this White paper is to give the reader an understanding of the main functions and features of this phone.

People who can benefit from this document include:

- Operators
- Service providers
- Software developers
- Support engineers
- Application developers

This White paper is published by:

Sony Ericsson Mobile Communications AB,
SE-221 88 Lund, Sweden

Phone: +46 46 19 40 00
Fax: +46 46 19 41 00
www.sonyericsson.com/

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Sony Ericsson Developer World

On www.sonyericsson.com/developer, developers will find documentation and tools such as phone White papers, Developers guidelines for different technologies, SDKs and relevant APIs. The Web site also contains discussion forums monitored by the Sony Ericsson Developer Support team, an extensive Knowledge Base, Tips & Tricks, example code and news.

Sony Ericsson also offers technical support services to professional developers. For more information about these professional services, visit the Sony Ericsson Developer World Web site.

Document history

Change history		
2007-05-08	Version R1A	First revision.

Contents

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Product overview

The T650 offers state-of-the-art technology encased in an attractive harmony of scratch-resistant glass and stainless steel. The user interface affords quick and easy access to functions and is complemented by sophisticated illumination, astounding sounds and impressive graphics.

Features include:

- 3.2 megapixel camera with auto focus.
- Easy-to-use horizontal digital camera menu.
- Share full-size images via mobile blogging.
- Web browser supporting html.
- RSS reader.
- PictBridge™ to print pictures directly on a printer.
- Easy content management with PictureDJ™, VideoDJ™ and more.

- A music player.
- FM radio with RDS.
- 3D gaming.
- A handsfree, desk stand and USB cable are provided in the kit.
- A memory card reader for Memory Stick Micro™ (M2™).

The slim, elegant stick form factor has a large 1.9inch 262,144k QVGA colour screen. Memory capacity is up to 16 MB internally. The ergonomic keypad allows you to write text messages quickly, type in phone numbers or search for particular content such as pictures or songs. You can multitask with applications running in the background, for example, talk and browse, send messages or download music at the same time.

Key features

3.2 Megapixel camera and Video call camera

There are two cameras. The main camera is 3.2 megapixel and includes 3x digital zoom and auto focus. All this means high quality pictures. The horizontal user interface allows for easier camera handling. There is also a video call camera. Accessing video call mode via the main menu activates the VGA video call camera.

1.9-inch colour screen

The large 1.9 inch (240x320 pixels) full graphic QVGA 262,144k colour screen enhances viewing, facilitating high-quality multimedia and entertainment.

Video camera

The camera captures a video recording and stores it in the phone. A video clip can be shared as a picture message with friends or family. The phone supports QCIF size video recording and streaming and QVGA playback.

RSS Reader

A Really Simple Syndication (RSS) Reader is used in combination with the Internet browser. When browsing, frequently updated content, such as news headlines can be received as feeds.

HTML Web browser support

Browse the Internet and look at the Web sites in a different way with Access NetFront 3.3 – An HTML browser which supports an complete Web standard suite.

Mobile blogging

Send pictures via the Internet to show on your personal blog web page, allowing people easy access and possibility to comment your pictures.

PictBridge™ – Camera album printing

Transfer images from the phone via USB cable directly to a printer, without a computer or photo editing software.

Push email

The phone supports push email, a method of pushing new emails automatically to mobile devices. Push email increases mobile email usability, with email being delivered in the background (similar to SMS or MMS).

Music player and Video player

Play music, audio and video clips, streamed or downloaded. The folder system enables you, for example, to organize your favourite songs into groups and create simple playlists.

Disc2Phone

Music management software on the CD which is included in the kit. You can create your own playlists and albums and transfer them to the phone. Music files can be transferred from a computer to the phone by using software included on the CD in the box. Search for and select music on your computer or audio CDs and convert your existing audio tracks to MP3 format.

PlayNow™

A unique and easy-to-use direct link for the downloading of best selling content in the form of music files, video clips, games, themes and images. For example, select PlayNow™ and go straight to a live list of top music hits.

All formats that are supported in the phone will be possible to download. Music, video and images may be previewed before purchase. The music format is MIDI, MP3, MP4, Real ® 8 or WAV (Polyphonic 24 voices or more).

3D Gaming

Gaming is a very popular feature in mobile phones, and with Java™, users can download new games and skill levels to further enhance their entertainment experience. Several embedded games are included in the phone at purchase.

Java™

Download additional applications which are information- and entertainment- based. This gives users a chance to personalize the functions and features in their phones, and developers the opportunity to create new applications.

Bluetooth™ wireless technology

Several devices (simultaneous Bluetooth^{TM} connections) can be connected up to 10 metres (33 feet) away using Bluetooth wireless technology. For example, when it rings, the phone can be answered with a Bluetooth headset, and images can be sent to another phone at the same time. Several mobile phones can take part in a Bluetooth-supported game and the phone and a computer can exchange data such as images, video clips, vCards, music files and calendar data. Bluetooth version 2.0 is supported.

Bluetooth™ audio streaming

Listen to audio in compatible devices. By connecting a Bluetooth A2DP compatible accessory you can enjoy high quality stereo audio streaming wirelessly from the phone. Many A2DP accessories also support the Bluetooth Audio Video Remote Control Profile (AVRCP) – allowing you to control the music player in the phone using the accessory interface.

USB 2.0 mass storage

When connecting the phone to a computer using the provided USB cable, the memory in the phone appears on the computer screen as a removable disk along with other disks and drives in the computer. You can then quickly and easily drag and drop items such as images, documents, music files and video clips between folders in the phone and your computer.

Personal Information Management (PIM)

Stay up-to-date with everyday events by synchronizing phone contacts, calendar appointments, tasks and notes in the phone with similar programs in a computer. The USB cable which comes with the phone, or the Bluetooth feature can be used together with the synchronization software which is available on the CD in the kit or can be downloaded from www.sonyericsson.com/support.

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Images

Technologies in detail

This chapter includes short descriptions of the technologies available in this product compared to one other Sony Ericsson product.

Functions and features

The following includes short descriptions of the technologies available in T650 compared to K800.

Feature	T650	K800
3D games	Yes	Yes
3G enabled Technology that enables 384 Kbps data transfer and video telephony	Yes	Yes
Activity menu (multi-tasking) The user can easily handle missed calls, new text and picture messages, task reminders, shortcuts and get quick access to favourite Internet bookmarks	Yes with enhanced functionality for background applications.	Yes with enhanced functionality for background applications.
Alarm clock Set a time for individual or recurring alarms	Yes	Yes
Backlight White backlight to illuminate the phone screen	Yes	Yes
Battery	3.6V, 930mAh, Lithium Polymer	3.6V, 950mAh, Lithium Polymer
Battery charging time	At least 90% charged within 2 hours. Fully charged within 2.5 hours.	At least 90% charged within 2 hours. Fully charged within 2.5 hours.
Bluetooth™ audio streaming Listen to audio in compatible devices	Yes	Yes
Bluetooth™ audio video remote control Use the phone as a remote control for home electronics, PC applications and other accessories	Yes	Yes
Bluetooth™ PAN Connect the phone to Internet using Bluetooth™	Yes	Yes
Bluetooth™ wireless technology Wireless connectivity between devices. Range - up to 10 metres (33 feet). Support for specification of the Bluetooth System, version 2.0	Yes	Yes

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Feature	T650	K800
Business card exchange Exchange contact information	Yes	Yes
Calculator	Yes	Yes
Calendar Calendar with day, week and month views and reminders	Yes	Yes
Call list View calls made and received	Yes	Yes
Camera	3.2 Megapixel	3.2 Megapixel
Camera auto focus The camera automatically focuses on the subject in a focus area in the screen/viewfinder	Yes	Yes
Camera button A dedicated camera button. Press and hold to activate the integrated camera	Yes	Yes
Camera file browser Browse the picture folder without leaving the camera function	Yes	Yes
Camera light	Yes	Flash
Camera buttons on top When the camera is used in horizontal mode, the side buttons with camera functionality are on top, for a digital still camera feel	Yes	Yes
Camera menu Easy-to-use horizontal digital camera menu	Yes	Yes
Camera Picture stabilizer Picture and video image stabilizer functionality. If available, use to keep the image steady	No	Yes
Camera red eye reduction	No	Yes
Camera scene modes Use predefined settings when taking pictures in different environments, for example, at night or fast-moving objects	Yes	Yes
Chinese input method Chinese input methods: Text input methods based on Simplified or Traditional Chinese. Bopomofo, Pinyin or Stroke	Yes	Yes

Feature	T650	K800
Clock On-screen clock that keeps time even when the phone is off	Yes	Yes
Co-branding area	No - Generic Available for Operator variants	20 x 6.5 mm
Code memo A safe place to store all PIN codes and other information. To access Code memo, only one PIN code is needed	Yes	Yes
Colour	Growing Green Midnight Blue	Velvet Black Allure Brown
Contacts Phonebook with fields for name, phone and fax numbers, email address, street address, company, title	Yes	Yes
Conference calls Support for multiparty calling	Yes	Yes
Connector A1 (Fast port)	Yes (side)	Yes (bottom)
Content online Downloadable pictures, games, themes, ringtones available online	Yes	Yes
Copyright protection - DRM DRM (Digital Rights Management) features the rights and copy protection of downloaded content (audio, pictures, music tones, video, entertainment features such as games, Java applications etc.)	Yes	Yes
Design	Dual front	Dual front with active lens cover
Device Management (DM) DM utilizes GPRS as bearer (basic network connectivity needs to be in place) of the provisioning data and allows the operator to access the phone and check and set different settings such as network connectivity (GPRS), email, MMS, WAP and Java™. Device Management is achieved by supporting Over The Air provisioning 7.1 (OTA), OMA Client Provisioning 1.1 (CP) and OMA Device Management (DM) 1.2	Yes	Yes
Digital zoom	3x	3x

Feature	T650	K800
Email Email client with inbox, outbox, compose/send and other functions	Yes	Yes
EMS (Enhanced messaging) Text messaging (SMS) with support for pictures and sounds	Yes	Yes
Exterior description Size mm (Length x width x thickness/thinnest)	104 x 46 x 12,5 mm	106 x 47 x 18 mm
External antenna connector For use with an advanced car handsfree accessory	No	Yes
Fast port A system connector which enables faster data transfer between the phone and a computer	Yes	Yes
File manager Folder structure storage to help store and organize pictures, sounds and other phone content	Yes with enhanced functionality for camera content	Yes with enhanced functionality for camera content
Flight mode All phone radio transceivers are inactivated. This starts the phone so that only certain functions are available, such as the calendar, music player or a game. The phone may then be used in some areas, such as aeroplanes or hospitals, where full mobile phone functionality is not allowed	Yes	Yes
FM radio with RDS FM radio with presets, auto and manual search. The handsfree is used as an antenna. The radio can also be used as an alarm signal	Yes	Yes
Form factor	Monolithic Stick	Monolithic Stick
Games download Replace in-phone games with new ones	Yes	Yes
Games embedded	Yes	Yes
GPRS General Packet Radio Services - a communications standard enabling packet data transfer of 21.4 Kbit/s per time slot. Multislot class 10 supported (max 5 simultaneously)	Yes	Yes

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Feature	T650	K800
High Speed Data HSCSD - a communications standard enabling GSM data transfer 14.4 - 28.8 Kbps	Yes	Yes
Icon Desktop 12 A graphic icon desktop with 12 interactive icons	Yes	Yes
Image formats **QQVGA** (160x120 pixels) **VGA** (640x480 pixels) **1 MP** (1280x960 pixels) **2 MP** (1632x1224 pixels) **3 MP** (2048x1536 pixels) or Note: MP = Megapixel (values without fractions).	 No Yes Yes Yes Yes	 No Yes Yes Yes Yes
Instant messaging (Wireless Village/My friends) Chat - several people can take part in a mobile messaging session. Instant messaging/Wireless Village server community	Yes	Yes
Internet browser cHTML - A mobile device adapted version of the standard Internet communications protocol HTML. Full HTML support, ECMA script, DOM level 1& 2, etc.). Progressive download of video files	Yes Yes Yes Yes	Yes Yes Yes Yes
Internet blogging Share up to full-size pictures over the Internet on your personal Web page. The size of uploaded pictures is dependent on customizations	Yes	Yes
Internet security Encrypts confidential information such as credit card and bank account numbers. Necessary for mobile banking and shopping	Yes, SSL/TLS	Yes, SSL/TLS
JavaTM Support for J2ME™ technology	Java 2, Micro Edition (J2ME™), Java 3D™	Java 2, Micro Edition (J2ME™), Java 3D™

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Feature	T650	K800
Keys - navigation and more	4+1 navigation 2 soft Back Clear Activity menu Internet/operator	4+1 navigation 2 soft Back Clear Activity menu Internet/operator
Keys - keypad	12 alphanumeric	12 alphanumeric
Keys - side and other	Volume/camera zoom Separate on/off Camera key	Volume/camera zoom Multimedia (play/stop) Separate on/off Camera key Photo key (upper/right): Camera mode: • Camera scenes or Video night mode Standby mode: • Camera album Photo key (lower/left): Camera mode • Camera or Video shoot mode Standby mode • The most recently taken picture shown in full view
Lunar calendar A calendar system used in China and other parts of Asia. A lunar month is determined by the period required for the moon to complete its full cycle of 29.5 days	Yes	Yes

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Feature	T650	K800
Media player A combined digital media player for music and video. Play music and video clips, streamed or downloaded and the folder system enables you, for example, to organizing favourite songs into groups and create simple playlists. A practical play/stop function makes it easier to listen to music any time, anywhere	No See Music player or Video player	No See Music player or Video player
Memory (built-in) User-free memory in phone	 Up to 16 MB	 Up to 64 MB
Memory card reader (slot) A slot for inserting a micro peripheral storage device Memory card support: Memory Stick Micro™ (M2™)	 Yes Yes	 Yes Yes
Menu shortcuts A function making it possible to dedicate shortcuts to the most-used phone functions	Yes	Yes
MMS (Multimedia messaging) Picture messaging with text and sound	Yes	Yes
MMS video Support in the phone for sending video using MMS	Yes	Yes
Modem Circuit Switched/Packet Switched Internet dial-up support	Yes	Yes
MusicDJ™ A sampler music tool with MIDI drum, guitar, keyboard, bass and brass loops in different music styles, which can be combined to create polyphonic ringtones	Yes	Yes
Music player A digital music player. It is possible to play music files in the folder system, organize your favourite songs into groups and create simple playlists. A practical play/stop function makes it easy to listen to music any time, anywhere	Yes	Yes
Music tones Music tones, also called master tones, are DRM protected music by original artists. Various digital audio formats are supported	Yes	Yes

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Feature	T650	K800
My friends See Instant messaging	Yes	Yes
Networks 3G GSM/GPRS	 UMTS 2100 GSM (R99) 900, 1800, 1900, E-GSM 900	 UMTS 2100 GSM (R99) 900, 1800, 1900, E-GSM 900
OMA Data Synchronization (SyncML) A device communications standard that enables remote synchronization between devices	Yes SyncML 1.2 SyncML 1.1	Yes SyncML 1.2 SyncML 1.1
OTA settings WAP, email and other settings can be sent over the air to the phone	Yes	Yes
Photo light When lighting conditions are poor, activate the picture light	Yes	No Automatic Xenon flash
PhotoDJ™ A drawing tool in the phone where existing pictures can be altered	Yes	Yes
Picture gallery A thumbnail image gallery where sections of several pictures can be viewed at the same time	Yes	Yes
Picture phonebook Add a picture to a stored contact. The picture appears on the screen when the stored contact calls	Yes	Yes
PlayNow™ (direct link) Listen to music before you purchase and download it to your phone	Yes	Yes
PlayNow™ Games (direct link) Preview games straight from the phone desktop in three clicks before you purchase and download	Yes	Yes
Polyphonic voices	72	72
Predictive text input	Yes	Yes

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Feature	T650	K800
PictBridge™ Transfer images from the phone via the USB cable directly to a printer, without a computer or photo editing software	Yes	Yes
RSS Reader Frequently updated content delivered as feeds via a Web site, for example, news headlines in the browser	Yes	Yes
Screen Type: Size: Resolution: Technology: Colours displayed together: Backlight colour:¨ Real glass scratch resistant window	Full graphical 1.9 inches 240 x 320 pixels TFT, QVGA 262,144 (18 bit) White Yes	Full graphical 2.0 inches 240 x 320 pixels TFT, QVGA 262,000 (18 bit) White No
Screen saver	Yes	Yes
Settings download (Ready to run) Set up functions that require a connection to the Internet such as the Internet browser and picture messaging. This function runs in the setup wizard or can also be chosen in the Settings menu. This function is not included in the setup wizard for customized phones	Yes	Yes
SIM card lock The possibility to protect the SIM card with a four-digit PIN code	Yes	Yes
SMS long (Text messaging) Concatenated SMS text messaging	Yes	Yes
Sleep mode A power-saving feature that minimizes battery power consumed when the phone is in standby	Yes	Yes
Sony Ericsson Remote Update Service Download the latest operator-approved software, over the air, for your mobile phone	Yes	Yes
Sony Ericsson Update Service Connect the phone to an Internet-connected computer, download the latest operator-approved software from the web, www.sonyericsson.com/support and update the mobile device	Yes	Yes

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Feature	T650	K800
Sound recorder A recording device in the phone that can record voice messages or other sounds	Yes	Yes
Speakerphone	Yes	Yes
Speed dialling Allocate contacts in the phone book to specific keys on the keypad	Yes	Yes
Standby time	Up to 400 hours	Up to 350 hours
Status view The screen shows the network being used, the time and other status information	Yes	Yes
Stopwatch	Yes	Yes
SVG Tiny 1.1 Scalable Vector Graphics for impressive animated wallpapers, menus and other graphic elements	Yes	Yes
Synchronization Apple® Synchronize and share phone content with Apple® computers supporting iSyn	Pending certification	Pending certification
Synchronization PC Synchronize and share phone content with a computer	Yes	Yes
Talk time GSM	Up to: 10 hours	Up to: 7 hours
Tasks Keeps track of important things you have to do	Yes	Yes
Themes Phone menu texts and background graphics	Yes	Yes
Timer Set the phone to alert after a specific time	Yes	Yes
Twin camera Two cameras - a 3.2 megapixel camera capable of taking still pictures/recording video and an additional video call camera optimized for video calls located above the screen	Yes	Yes

Feature	T650	K800
UMTS A 3G technology standard capable of data transfer 384 Kbps	Yes	Yes
USB connectivity support Connect the phone to a computer with the USB cable provided and the memory in the phone appears on the computer screen as a mass storage device	Yes	Yes
Vibrating alert The phone vibrates when a call comes in	Yes	Yes
Video call camera	Yes	Yes
Video calling When you make a video call, the recipient can be seen in the screen. The service requires UMTS/WCDMA	Yes	Yes
Video call talk time	Target Up to 1 hour 35 minutes	Target Up to 1 hour 35 minutes
VideoDJ™ Create video sequences by combining different clips and adding music and images	Yes	Yes
Video player Play video clips, streamed or downloaded. Transfer video clips to another phone or a computer via available transfer method	Yes	Yes, see Media player
Video streaming Real-time streaming of video, for example, live cam. Media can also be downloaded and saved in the phone memory	Yes	Yes
Viewfinder When using the camera, a picture can be previewed before it is captured	Yes	Yes
Voice control Voice answer, reject and call. Assign voice commands to items in the phonebook and when a call is made, the voice command can be used instead of pressing keys	Yes	Yes
Voicemail Support for voicemail operator service including automatic answering and message recording	Yes	Yes

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Feature	T650	K800
WAP 1.2.1 A mobile Internet standard to access specially designed Internet sites	Yes	Yes
Weight	95 g	115 g

Facts and figures

This chapter offers readers a detailed listing of all the technical data relating to the product. Comprehensive descriptions of performance and technical characteristics are presented in table format for quick and easy access.

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Technical specifications

General technical data

System	Tri-band GSM Release 99 recommendations. GSM 900, GSM 1800, e-GSM and WCDMA FDD mode supported, GSM 1900 and e-GSM mode supported
Speech coding	HR, FR, EFR, AMR supported where available, for high speech quality
GSM SIM/ UMTS USIM card	GSM SIM - GSM 11.11, UMTS SIM - 3GPP™ TS 31.101. Small plug-in card, 1,8 V and 3 V
Memory	Up to 16 MB internal (depending on software configuration/file content) + extra slot for supported memory cards
Data transfer speeds	Up to 384 Kbps (downlink) Up to 384 Kbps (uplink)

Performance and technical characteristics

Dimension	WCDMA	GSM 900/ E-GSM 900	GSM 1800	GSM 1900
Frequency range (MHz)	TX:1920 – 1980 RX:2110 – 2170	TX: 880 – 915 RX: 925 – 960	TX: 1710 – 1785 RX: 1805 – 1880	TX:1850 –1910 RX:1930 –1990
Channel spacing	5 MHz with 200 kHz channel rasters	200 kHz	200 kHz	200 kHz
Number of channels	277	174 Carriers *8 (TDMA)	374 Carriers *8 (TDMA)	299 Carriers *8 (TDMA)
Modulation	QPSK	GMSK	GMSK	GMSK
TX Phase Accuracy	Error Vector Magnitude: <17.5%	< 5° RMS Phase error (burst)	< 5° RMS Phase error (burst)	< 5° RMS Phase error (burst)
Duplex spacing	190 MHz	45 MHz	95 MHz	80 MHz
Frequency stability	+/- 0.1 ppm	+/- 0.1ppm	+/- 0.1ppm	+/- 0.1ppm
Voltage operation (nominal)	3.6 V	3.6 V	3.6 V	3.6 V
Transmitter RF power output	24dBm Class 3 (0.25 W peak)	33 dBm Class 4 (2 W peak)	30 dBm Class 1 (1 W peak)	30 dBm Class 1 (1 W peak)
Transmitter output impedance	50 ohm	50 ohm	50 ohm	50 ohm

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Dimension	WCDMA	GSM 900/ E-GSM 900	GSM 1800	GSM 1900
Transmitter spurious emission (according to specification)	< -36 dBm up to 1 GHz < -30 dBm over 1 GHz (according to 3GPP™ spec.)	< -36 dBm up to 1 GHz < -30 dBm over 1 GHz	< - 30 dBm	< - 30 dBm
Receiver RF sensitivity	Better than -106.7 dBm @ 12.2 Kbps CS voice	Better than – 102 dBm	– 102 dBm	– 102 dBm
Receiver RX Bit error rate	< 0.1%	< 2.4%	< 2.4%	< 2.4%

USSD technical data

Feature	Support
USSD support	GSM Phase 1/2 (Cross-phase compatibility)
Mode support	UI-mode supported SAT initiated USSD supported
UI-mode details	• It is possible to scroll the text up and down in USSD messages. • It is possible to highlight embedded numbers and take actions accordingly

GPRS technical data

Dimension	Support
Compatible GPRS and SMG specifications	Release 99 according to ETSI specification
Data rates	Multislot class 10 supported (max 5 simultaneously) CS-1, CS-2, CS-3, CS-4 9,050 bps, 13,400 bps, 15,600 bps, 21,400 bps supported (network-dependent)
Medium Access Modes	Dynamic allocation
Support of Packet Control Channels (PBCCH/PCCCH)	Yes
Network operation mode	NOM I, II, III
Support of GPRS/CS combined procedures	Yes
Network control mode	NC0 and 2

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Dimension	Support
Support of access in 2 phases	Yes
Support of PRACH on 11 bits	Yes
Support of GPRS re-selection C31/ C32	Yes
Support of static and dynamic addressing	Yes
Support of power control Uplink and Downlink	Uplink = yes, Downlink is a network feature
Support of ciphering algorithms	GEA1, GEA2, GEA3
Support of compression algorithms	Yes, V42bis and IP header compression
Mode of operation	Class B and Class C modes of operation supported
R Reference point	Physical layer: Support of RS232 PPP is supported as L2 layer in the R reference point Authentication algorithms PAP, CHAP supported
IP connectivity	PDP type IP is supported IP termination in mobile or TE (laptop, PDA) supported
PDP context	10 PDP context descriptions stored in mobile PDP context description is edited via application in mobile, AT-command or via OTA Simultaneous PDP contexts are supported, maximum 4
SIM	GPRS aware, as well as non-GPRS aware; SIM cards are supported
AT commands	Some of the supported commands: AT+CGDCONT - DEFINE PDP CONTEXT AT+CGEQREQ - Quality of Service Profile (REQUESTED) AT+CGEQMIN - Quality of Service Profile (Minimum Acceptable) AT+CGATT - PACKET DOMAIN SERVICE ATTACH OR DETACH AT+CGACT - PDP CONTEXT ACTIVATE OR DEACTIVATE AT+CGDATA - ENTER DATA STATE For more information, see www.sonyericsson.com/developer

SIM AT services supported

Service	Mode	Support
CALL CONTROL BY SIM		Yes
MO SMS CONTROL		No
DATA DOWNLOAD TO SIM	Cell Broadcast SMS	Yes Yes

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Service	Mode		Support
DISPLAY TEXT		Text of up to 240 characters (120 UCS2 coded)	Yes
	bit 1:	0 = normal priority	Yes
		1 = high priority	Yes
	bit 8:	0 = clear message after a delay	Yes
		1 = wait for user to clear message	Yes
GET INKEY		General: The GET_INKEY requires that the user confirms his/her choice	Yes
	bit 1:	0 = digits (0-9, *, # and +) only	Yes
		1 = alphabet set	Yes
	bit 2:	0 = SMS default alphabet	Yes
		1 = UCS2 alphabet	Yes
	bit 3:	0 = character sets defined by bit 1 and bit 2 are enabled	Yes
		1 = character sets defined by bit 1 and bit 2 are disabled and the Yes/No response is requested	Yes
GET INPUT		General: No. of hidden input characters	252
	bit 1:	0 = digits (0-9, *, # and +) only	Yes
		1 = alphabet set	Yes
	bit 2:	0 = SMS default alphabet	Yes
		1 = UCS2 alphabet	Yes
	bit 3:	0 = ME may echo user input on the display	Yes
		1 = user input not to be revealed in any way (see note)	Yes
	bit 4:	0 = user input to be in unpacked format	Yes
		1 = user input to be in SMS packed format	Yes
	bit 8:	0 = no help information available	Yes
		1 = help information available	Yes
LAUNCH BROWSER			Yes
MORE TIME			Yes
PLAY TONE			Yes
POLLING OFF			Yes
POLL INTERVAL			Yes

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Service	Mode	Support
PROVIDE LOCAL INFORMATION	'00' = Location Information (MCC, MNC, LAC and Cell Identity)	Yes
	'01' = IMEI of the ME	Yes
	'02' = Network Measurement results	Yes
	'03' = Date, time and time zone (DTTinPLI)	Yes
	'04' - Language setting	Yes
	'05' - Timing setting	Yes
REFRESH	General: The reset option requests the user to wait while the phone restarts	Yes
	'00' =SIM Initialization and Full File Change Notification	Yes
	'01' = File Change Notification	Yes
	'02' = SIM Initialization and File Change Notification	Yes
	'03' = SIM Initialization	Yes
	'04' = SIM Reset	Yes
SELECT ITEM		Yes
SEND DTMF		Yes
SEND SHORT MESSAGE	bit 1: 0 = packing not required 1 = SMS packing by the ME required	Yes Yes
SEND SS		Yes
SEND USSD		Yes
SET UP CALL	General: Capability configuration Set-up speech call CallParty Subaddress DTMF support	Yes No Yes
	'00' = set up call, but only if not currently busy on another call	Yes
	'01' = set up call, but only if not currently busy on another call, with re-dial	Yes
	'02' = set up call, putting all other calls (if any) on hold	Yes
	'03' = set up call, putting all other calls (if any) on hold, with re-dial	Yes
	'04' = set up call, disconnecting all other calls (if any)	Yes
	'05' = set up call, disconnecting all other calls (if any), with re-dial	Yes

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Service	Mode	Support
SET UP EVENT LIST	'00' = MT call	Yes
	'01' = Call connected	Yes
	'02' = Call disconnected	Yes
	'03' = Location status	Yes
	'04' = User activity	Yes
	'05' = Idle screen available	Yes
	'06' = Card reader status	Not Applicable
	'07' = Language selection	Yes
	'08' = Browser termination	Yes
	'09' = Data available	No
	'OA' = Channel status	No
SET UP IDLE MODE TEXT		Yes, 1 row of text is supported
SET UP MENU		Yes
TIMER MANAGEMENT		Yes
OPEN CHANNEL		Yes
CLOSE CHANNEL		Yes
RECEIVE DATA		Yes
SEND DATA		Yes
GET CHANNEL STATUS		Yes

User Interaction with SIM AT

Display text

Text of up to 240 characters (120 UCS coded) is supported.

Text clearing times are 5-20 seconds and a 60-second time-out limit for the user to clear the text. 'Key' responses:

- 'Long Back' – Proactive session terminated by user.
- 'Back' – Backward move in proactive session.

Any other key clears the screen if the command is performed successfully.

Get inkey

Prompt for a one-character input. Pressing 'Ok' without entering a character gives warning message "Minimum 1 character". 'Key' responses:

- 'C' clears current character.
- 'Long Back' terminates the proactive session.
- 'Back' – Backward move in proactive session.
- 'OK' – Command performed successfully.

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Get input

Prompt for character input. The phone will refuse to accept further input when maximum response length is exceeded. UI Maximum Response lengths:

- Digits Only – 160 characters.
- SMS default alphabet characters – 160 characters.
- Hidden Characters (digits only) – 20 characters.

'Key' responses:

- 'C' clears current character.
- 'Long Back' terminates the proactive session.
- 'Back' – Backward move in proactive session.
- 'OK' – Command performed successfully.

Select item

Scroll to highlight item for selection. 'Key' responses:

- Navigational key press down – Scroll down list.
- Navigational key press up – Scroll up list.
- Long 'Back' terminates proactive session.
- 'Back' – Backward move in proactive session.
- 'OK'– Command performed successfully.

Send short message

Default message "Sending message, please wait" can be replaced for the Alpha Identifier text, or suppressed completely if a null text is provided. Default responses are "MESSAGE FAILED" or "MESSAGE SENT". 'Key' responses:

- Long 'Back' or 'Back' ends the proactive session.

Set up call

If the ME is on a call when the command 'Set up Call', 'putting all other calls on hold' is sent, the user will see the text 'Setting up a call current call will be held'. If 'OK' is pressed the current call will be put on hold and the new call set up. If the ME is on a call when the command 'Set Up Call, disconnecting all other calls' is sent, the user will see the text 'Setting up a call current call will be disconnected'. If the 'OK' key is pressed the current call will be disconnected and the new call set up.

Set up menu

Incorporates a SIM Application Toolkit Menu Item into the ME's main menu structure.

If an Alpha Identifier is supplied in the Set Up Menu command, this is used as the SIM AT entry in the ME's main menu. If no alpha identifier is supplied and several items are found in the menu, a default title is used. If the SIM AT Menu Item is selected by pressing 'Select', all the items sent in the Set Up Menu command will be available for selection, in the same way as the Select Item command.

Entertainment

Audio and Video

File types	Formats	Extensions
Audio (All listed audio file formats are supported ringtone file formats)	MP4 (AAC, AAC+, eAAC+) MP3 (192 Kbit/s) M4A 3GPP™ (AAC, AMR) AMR-NB AMR-WB WAV G-MIDI 1 SP-MIDI RealAudio ® 8 eMelody iMelody RHZ XMF WMA	.mp4 .mp3 .m4a .3gp, .3ga .amr .awb, .amr .wav .mid .mid .ra, .rm .emy .imy .rhz .xmf .wma
Video (including audio part)	MP4 (video: MPEG4, audio: AAC or AMR) 3GPP™ (video: MPEG4 or H.263, H.264, audio: AAC or AMR) RealVideo ® 8 WMV ASF	.mp4 .3gp .rv, .rm wmv
Streaming transport	RTSP according to 3GPP™	
Video encoding	H.263 Profile 0, Level 10	
Video decoding	MPEG-4 Simple Visual Profile Level 0 H.263 Profile 0, Level 10 H.264 Baseline Profile (Main subset), Level 1b RealVideo 8	
Audio encoding	AMR	
Audio decoding	AAC, AMR, MPEG-1 Layer 3, RealAudio 8	

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Java™

Feature	Functionalities
Java 2, Micro Edition (J2ME™)	• CLDC 1.1 (JSR 139) • MIDP 2.0 (JSR 118) • Wireless Messaging API (JSR 120/205) • Mobile Media API (JSR 135) • Java™ Technology for the Wireless Industry (JSR 185) • Java™ API for Bluetooth™ (JSR 82) • PDA Optional Packages for J2ME™ Platform (JSR 75) • Web Services (JSR 172) • Advanced Multimedia Supplements API (Camera Capabilities of JSR-234)
Java 3D	• Mascot Capsule Micro3D Version 3 • Mobile 3D Graphics API for J2ME™ (JSR 184)

Imaging/Messaging

3.2 Megapixel camera

Facts and figures	
Digital still camera (DSC)	
Colour depth	24 bit (8 bits per RGB channel)
Digital zoom	Main camera: 3x zoom
Settings camera (DSC)	
Shoot modes	Normal, Panorama, Frames
Scenes	Auto, Twilight landscape, Twilight portrait, Landscape, Portrait, Beach/Snow, Sports, Document
Picture sizes (resolution)	**3 MP** (2048x1536 pixels) or **2 MP** (1632x1224 pixels) **1 MP** (1280x960 pixels) **VGA** (640x480 pixels) Note: MP = Megapixel (values without fractions)
Focus	Auto, Macro, Infinite
Light	Off, Auto
Self-timer	Yes
Effects	Off, Black & white, Negative, Sepia, Solarize

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Facts and figures

White balance	Auto, Daylight, Cloudy, Fluorescent, Incandescent
Metering mode	Normal, Spot
Picture quality	Normal, Fine
Shutter sounds	Yes
Turn on time and date	Yes, add a time and date to a picture
Reset file number	Yes
Save to memory	Using phone memory or a memory card; no memory dedicated to the camera only

Video recorder

Video sizes (resolution)	QCIF 176 x 144 pixels
Settings video	
Shoot modes	For picture message, High quality video
Focus	Yes, same as camera
Night mode	Yes
Effects	Yes, same as camera
White balance	Yes, same as camera
Metering mode	Yes, same as camera
Turn on/off microphone	Yes
Reset file number	Yes, same as camera
Save to memory	Yes, same as camera

Video telephony

Facts and figures

Picture sizes (resolution)	QCIF (176x144 pixels) SQCIF (128x96 pixels)
Digital zoom	3.2 Megapixel camera: 3x zoom Video call camera: 2x zoom
Night mode	Yes
White balance	Auto
Brightness	Yes

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Facts and figures	
Video coding	H.263 MPEG-4 (Simple Visual Profile Level 0)
Audio coding	AMR

Images

Images can be shared via Bluetooth connection, MMS, email, computer file transfer or Cable.

Amount of free XRAM contols upper limit of image size and/or complexity that can be decoded.

Formats	Details
JPEG	ISO/IEC JPEG Baseline DCT Progressive DCT Non-differential
GIF	87a, 89a, support for interlacement, animation and transparency
BMP	Windows® bitmap format
PNG	
SVG	SVG Tiny 1.1, support for anti aliasing, compression, opacity and gradients
WBMP	Wireless bitmap

Short Messaging Service

Feature	Support
SMS Service Centre Number	It is possible to pre-load the SMS Service Centre Number
Pictures	It is possible to insert a picture or an icon into the text message. EMS compliant mobile handsets will be able to see the picture correctly
Reply to messages	It is possible to reply to received messages by SMS, MMS, voice message and email
Input methods:	Predictive writing and multitap
Copy and paste words	Yes
Teaching of predictive words that are not in the predictive dictionary	Yes
Possibilities when creating a message:	
save a sent message in a "Sent items" folder	Yes
insert a line in the message	Yes

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Feature	Support
assign a validity period to the message	Yes
use predefined messages	Yes
Possibilities when receiving a message:	
reply to the sender	Yes
forward the message	Yes
save the message on the SIM card	Yes
get delivery time and date	Yes
Possibilities of the previously sent message:	
delivery report of the message	Yes (if requested when sending)
forward the message	Yes
save the message on the SIM card	Yes
know the remaining capacity storage	Yes, > 95% full warning, capacity on the SIM card when saving to the SIM card
Possibilities of the previously received message:	
reply to the sender	Yes
save the message in the inbox	Yes
forward the message	Yes
know the remaining capacity storage	Yes, > 95% full warning, capacity on SIM when saving to SIM
Supported ways for replying to a received SMS:	
via SMS, MMS, voice message, email	Yes
via phone call (set up a call to the number contained in the message body)	Yes
via WAP call (go to the WAP address contained in the message body)	Yes
via USSD session	No
Print via infrared	No
Possibility to enable the user to send an SMS to a list of recipients	Yes
Possibility to write an email address as a recipient address	Yes, if email gateway is present
SMS storage	On the SIM card and in the phone
Nokia Picture Messaging	Yes

Enhanced Messaging Service

Feature	Support
Level of compliance supported by the handset regarding the specifications described in release 99.	Enhanced Messaging Service (EMS) according to the standard 3GPP™ TS 23.040 v4.3.0, with the addition of the ODI feature from 3GPP™ TS 23.040 v5.0.0
Number of messages that the handset is able to handle to generate a concatenated message	10
Capacity storage	Up to 1000 and the space on the SIM card
Outgoing messages	It is possible to... • see how many short messages an EMS message consists of before sending it • choose whether to send the message or not after writing it
Incoming messages	• A signal is heard once all parts of the message have been received or when a time-out occurs • It is possible to re-use the content of an EMS message. Sounds, pictures, and animations can be inserted in a new message, if the object is not protected using ODI
Delivery report for concatenated messages	A receipt is received in the handset when all parts of a concatenated message have been delivered if a delivery report is requested when it is being sent
Insert objects	It is possible to add pictures, animations and sounds to an EMS message
Sounds	Chimes high, chimes low, ding, tada, notify, drum, claps, fanfare, chords high, chords low
I-melody	Yes, version 1.2
Melodies	It is possible to... • receive (always), send via EMS (if not copyright protected) • download melodies and commercial tunes from WAP/WAP portals
WBMP	Yes
Picture sizes	16x16, 32x32 pixels, variable size in black and white
Pictures	It is possible to... • edit pictures using PhotoDJ™ • receive (always), send via EMS (if not copyright protected) • download pictures from WAP/WAP portals

Feature	Support
Animations	There is support for the following animations: Angry, Crying, Flirty, Happy, Kiss, Sad, Tongue, Wow, Confused, Devil, Glasses, Indifferent, Laughter, Sceptical and Wink, as defined in 3GPP™ TS 23.040 v4.3.0 It is possible to send and receive animations
TP-PID field value given by the handset before sending an EMS message	0x00

Multimedia Messaging Service

Feature	Support
MMS/CSD parameters and MMS/GPRS parameters placement	MMS is bound to an MMS profile An MMS profile is bound to an Internet profile. An Internet profile is bound to a Data Account. A Data Account contains either CSD parameters or GPRS parameters
Possibility to pre-configure the MMS parameters in factory	• MMS/CSD: Yes • MMS/GPRS: Yes
Possibility to configure the MMS parameters by OTA provisioning	• MMS/CSD: Yes • MMS/GPRS: Yes
Possibility for all the parameters from the parameters set to be OTA provisioned at the same time	• MMS/CSD: Yes • MMS/GPRS: Yes
Possibility for only one parameter, in the set of parameters, to be OTA provisioned	• MMS/CSD: No • MMS/GPRS: No
OTA provisioning solution	OTA Settings Specification v7.1 © Ericsson and Nokia and OMA provisioning
Supplier indication of realized interoperability tests between its MMS User Agent and MMS Relay/Server from other suppliers	Yes
Support of a standard or a proprietary procedure for OTA provisioning of MMS parameters	Proprietary and OMA provisioning
Functionalities that the user is able to set during message composition:	• message subject • message priority • email recipient address • message Cc, Bcc recipient(s) address(es) • delivery report request • read report request • MSISDN recipient address • Delivery time • Validity period

Feature	Support
From where can the user insert multimedia elements into multimedia messages:	File Manager Directly from camera Contacts Calendar Task Note Browser (vBookmark)
Possibility for sent messages to be memorized into a folder in handset memory	Yes
Actions that the user can perform after message retrieval:	• reply to the sender of the message SMS/MMS • reply to the sender and to Cc, Bcc people SMS/MMS • forward the message • delete the message • save message in a dedicated folder • call the sender of a message • save item • mark as unread • details
Multimedia codecs/formats supported for audio	AAC, AMR, MPEG Layer 3, Real 8, AWB, WAV, MP4, MIDI, iMelody, 3GPP™, XMF, M4A, RHZ, WMA.
Multimedia codecs/formats supported for video	MPG4, 3GPP™, SDP, Real 8, WMV.
Multimedia codecs/formats supported for image	JPEG, GIF87, GIF89A, PNG, SVG, WBMP, BMP.
Supported formats for message presentation:	• message body + attachments (email presentation) • SMIL version as described in OMA MMS IOP document version 1.2
Maximum message size that can be handled by the handset for message	Content Class and Creation mode are applied. Maximum size can also be customized.

Email client technical data

Feature	Support
Bearer type UMTS (IP)	Yes
Bearer type GSM Data (IP)	Yes, GPRS, HSCSD, ISDN and analog

Feature	Support
Character sets	ISO: ISO-8859-1, ISO-8859-2, ISO-8859-5, ISO-8859-7, ISO-8859-9, ISO-8859-10 Windows: Windows-1251, Windows-1252, Windows-1254, Windows-1255, Windows-1258 US-ASCII Unicode: UTF-7, UTF-8, UTF-16 Japanese: Shift_JIS, ISO-2022-JP Cyrillic: KOI8-R Simplified Chinese: GB2312, GB18030 Traditional Chinese: Big5 Thai TIS - 60
OTA provisioning solution	Yes
Protocols	POP3 and IMAP4
Push email	IMAP Idle (extension of IMAP4Rev1), OMA Email Notification 1.0 and scheduled checking
Secure email	SSL/TLS, both port methods (POPS/IMAPS) and STARTTLS
Remote configuration	OMA Client Provisioning and Nokia Smart Messaging
HTML mail	Yes (tags removed)
Inline images	Yes
Message management	Window of 50 latest messages Headers only or size limits
ESMTP	Yes
Background sending	Yes

Connectivity

Bluetooth™ technical data

Dimension	Support
Bluetooth capability statement	This phone supports Bluetooth Specification, version 2.0 with enhanced data rate (EDR).
Bluetooth functions	Basic Imaging Profile Dial-up Networking Profile File Transfer Profile Generic Access Profile Generic Object Exchange Profile Handsfree Profile Headset Profile Human Interface Device (HID) Profile JSR-82 Java API Object Push Profile Personal Area Networking Profile Serial Port Profile Synchronization Profile SyncML OBEX binding Advanced Audio Distribution Profile (A2DP) Audio/Video Remote Control Profile Phonebook Access Profile
Connectable devices	All products supporting Bluetooth spec. 1.1, or higher, and at least one of the profiles above.
Coverage area	Varies due to radio performance on remote device and the occurrence of obstacles. Up to 10 metres (33 feet).
Transmission power	Class 2, typical +3dBm or 2mW
Frequency band	2.4 GHz - the unlicensed ISM band.
Power consumption	GSM host processor excluded: • Standby, Bluetooth On mode: <0.6mA • Voice to headset (HV3 master): 11 mA (7 mA with EDR functionality, 2EV3 master). Dependent on various parameters whether if the phone is master or slave. • Data mode average: 27mA at 172.8 Kbps symmetrical (DH1).
Data transmission rate	Up to 600 Kbps asymmetric and up to 350 Kbps symmetric from an application level.

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OMA Data Synchronization (SyncML) technical data

Feature	Support for Sync ML
SyncML compliance	The handset is fully SyncML compliant, having passed SyncML Conformance testing. SyncML 1.2 or SyncML 1.1.2 is used depending on configuration and both are supported in Server-alerted synchronization.
Basic data formats	Contacts: vCard 2.1, Calendar: vCalendar 1.0 (vEvent) Tasks: vCalendar 1.0 (vTodo) Notes: text/plain, Bookmarks:vBookmark 1.0
Possibility for operators to extend SyncML functionality.	The device may be configured to include preset SyncML settings, and to control whether SyncML 1.1 or SyncML 1.2 will be used.
Possibility to synchronize other handsets using SyncML.	No
Transport method for SyncML messages.	HTTP, OBEX (IR, USB, Bluetooth)
Synchronization application placement.	Inside the handset.
Possibility for the user to configure login parameters (for example, username and password) to access the remote database.	Yes
Configuration parameters that can be entered/modified by the user.	Server URL, Username, User PWD, Paths to databases (Calendar, Contacts, Tasks, Notes and Bookmarks), UserID and PWD for Databases, Databases to be synchronized (on/off), Internet profile, Synchronization interval, Server ID and Server PWD, and permission to allow server-alerted synchronization. Can be provisioned with Ericsson Nokia OTA Settings Specification v7.1, OMA Client provisioning v1.1, and OMA Device Management 1.2
Mechanisms used by the handset to capture changes made by the end-user (i.e. how does the SyncML client in the handset know which changes were made to the address book).	It uses a change log where it marks the contact as updated.
Ability to deal with multiple servers.	Yes
Ability to perform conflict resolution actions.	No

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Web browser data

Feature	Support in the browser
Back/forward to previous/next page	Yes
Bearer type GPRS	Yes
Bearer type GSM Data	Yes, HSCSD, ISDN and analouge.
Bookmarks	Yes, with folders and sorting supported.
Bookmark Export/Import	Yes, can be sent and received using vBookmark format via Bluetooth™, SMS, MMS and email.
Cache	Yes (size 300 KB).
Character sets *	UTF-8 (Default), UTF-16, USASCII, Latin1, UCS2. *) When creating WML applications, it is recommended to always save the page contents as UTF-8, and that this is clearly indicated in the pages before publishing. This ensures that the contents of the application can be viewed, regardless of character sets used in gateways and the phone. All characters are not supported in all phones. The software version depends on which market the phone is associated to. Also, please note that the phone may not support input on a WAP Service which uses certain characters (languages), even if those characters are supported for browsing in the phone.
Clear cache	Yes
Home page	Yes, up to 10 different; one for each Internet profile.
HTML version for WAP browser	XHTML, Mobile Profile 1.2 Full HTML is supported ECMA Script is supported DOM level 1& 2 is supported
Hyperlinks in Text	Yes, highlighted as blue underlined text.
Hyperlinks in Images	Yes, indicated by a frame
Image Animation	Yes
Image Formats	GIF (interlaced and non-interlaced) WBMP, no transparent layers, JPEG, PNG, BMP and SVG.
Network Settings	Up to 10 different settings available by selecting WAP profile (Internet, Banking, Gateway etc.).
OTA Support	Yes
PPP Authentication	PAP, CHAP supported.
Reload page	Yes

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Feature	Support in the browser
Security	TLS version 1 SSL version 3 WIM on SIM ICC X.509 certificate support, WAP Profile WPKI OTA download of trusted certificates
Tables	Yes
User Agent Profiles	Yes, list of client characteristics - for example screen size.
Internet profiles	Dynamic - up to 10 WAP profiles, each with its own settings.

Web browser and Operator technical data

Feature	Support for browser	
Web browser		
Version	2.0 baseline	
HTML	XHTML Mobile Profile	
Access NetFront 3.3	• HTML 4.01, XHTML 1.1 Including mobile phone • CSS 1 & CSS 2 (Partial) • ECMAScript 3rd edition (equal to Java script 1.5) • DOM level1, level2 and Dynamic HTML (Partial) • Graphic formats: GIF, Animated GIF, JPEG, progressive JPEG, PNG, MNG, BMP, WBMP	
Provisioning		
Provisioning types	**The Ericsson-Nokia OTA solution** Over the Air Settings Specification, v7.1 © Ericsson and Nokia	**OMA Client provisioning (v1.1)**
Total Parameter sets	10 (shared between the WAP provisioning types). < or = 10 (total number of WAP profiles).	

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Feature	Support for browser	
Parameter set list	name, homepage and homepage title (1st bookmark element), proxy/GW address, bookmarks (remaining bookmark elements), CSD phone number, CSD data rate, CSD dial type, GPRS APN, protocol authentication, GW authentication, secure connection on/off	name, homepage, proxy/GW address, CSD phone number, CSD data rate, CSD dial type, CSD response timer, GPRS APN, protocol authentication, GW authentication, GPRS QoS
Parameter sets include	CSD, GPRS (different sets).	
Factory pre-configuration	CSD (possibility to lock a setting), GPRS.	
OTA	CSD, GPRS configuration possible.	
Security mechanism		
Bearer	**The Ericsson-Nokia solution**	**OMA Client Provisioning**
OTA via SMS	Operator verification through a code that can be included in the OTA configuration data. This code is shown to the user who can choose to install or not.	Uses security mechanism (SEC) methods according to WAP-183-ProvCont-20010724-a (see www.openmobilealliance.org).
Interface		
Bearer	**The Ericsson-Nokia solution**	**OMA Client Provisioning**
OTA via SMS	A question whether to install, with the code if available is asked. The user may have to choose whether to create a new WAP profile or to replace an existing WAP profile.	For NETWPIN the user is asked to accept to install received settings. For USERPIN, USERNETWPIN and USERPINMAC the user is subsequently asked to enter a PIN code that is a shared secret between the service provider and the user.
Re-provisioning Interface	The Ericsson-Nokia solution	OMA Client Provisioning
OTA via SMS	Same interface as above.	If the settings previously installed were privileged or have higher priority, it might not be possible to install the settings again unless the terminal is reset, otherwise as above.
Carrier reset/provisioning	Yes, but not if the set is pre-configured in the factory and locked.	

Feature	Support for browser
SWIM	Not used for provisioning. The SWIM is only used for WAP security, both SSl/TLS connections and digital signatures.
Applicative provisioning	
Preferred bearer customization	Yes
Email customization	Yes
Other applications/features	Yes (MMS, SyncML, Wireless Village, OMA Device Management, Streaming).
Technologies	
OMA Client provisioning	Yes, WAP provisioning document v1.1.
Openwave OTA	No
Other	Yes. The Ericsson-Nokia solution. OTA Settings Specification v7.1.
Provisioning bearer	SMS
Parameter sets available	< or = 10 (total number of Internet profiles)
Parameter sets for OTA modification	< or = 10 (total number of Internet profiles)

PUSH	
Content types	
Service Indication (SI)	Yes
Service Loading (SL)	Yes
Cache Operation (CO) content type	Yes
Session Initiation Application (SIA)	Yes
Man Machine Interface	
SI/content retrieval postponing	Yes
SI menu structure accessibility	Messaging, Inbox
SL reception warning	The user can make a choice if a dialogue is wanted or not before loading the SL. Messaging/Settings/Push/Allow push msg/Always ask
SIA reception warning	Yes
Cache size limitations	The oldest push in the inbox will be discarded.
Number of push messages	Depends on the size of the push messages. Around 20 push messages with a size of 500 bytes can be stored.
Push deactivate	Yes (Messaging/Settings/Push/Allow push msg).

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Feature	Support for browser
Dynamic push menu changes	No. There are no changes in the menus when activating/deactivating push.
Security	
Mechanisms for push	None
Trust with PPG	Sending a SIA is the most reliable.
WSP push sessions	The White List is supported.
Denial of service/spoofing	
User agent profile	
UA profile content sent at beginning of WSP session	No
OA profile content size	
URL sent pointing to the UA profile at the beginning of WSP session	Yes
URL location	On the manufacturer Internet site.
WTAI	mailto: scheme smsto:scheme mmsto:scheme
WTA Make Call	Yes
WTA Send DTMF	Yes
WTA Add Phonebook	Yes
DOWNLOAD	
OMA download functionality	Yes
HTTP GET solution to download content	Yes
Other download content	Yes. No download limit when using HTTP protocol.
Download application/product memory check	Yes
Downloaded object solution	Yes. The user is informed where the content is saved and asked if it should be used at once or later.
UAP indication for downloading	Yes
Other features	Yes. Store, delete, forward, use, manage.
Object formats	Formats supported in the phone.
GRAPHICAL USER INTERFACE	
Man Machine Interface	

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Feature	Support for browser
Selection keys	Yes
Separate/dedicated back or erase keys	Yes
Display backlight on when browsing	Yes
Predictive writing	Yes
"http://" string displayed automatically when entering URLs	Not displayed but the "http://" is added automatically to the URL.
Elements	
Pop-up menus	Yes, in XHTML.
Radio buttons	Yes, in XHTML.
Check boxes	Yes, in XHTML.
Buttons	Available as XHTML form controls.

Abbreviations

3GPP™

3rd Generation Partnership Project

AAC+

Advanced Audio Coding

AMR

Adaptive Multi Rate.
Audio format for speech sounds.

API

Application Programming Interface

CS

Circuit Switched

CSD

Circuit Switched Data

DRM

Digital Rights Management. Controlling copying and distribution of contents, with respect to intellectual property rights.

DTMF or Touch Tone

Dual Tone Multi-Frequency signal. Codes sent as tone signals. Used for telephone banking, accessing an answering machine, etc.

e-GSM

Extended GSM. New frequencies specified by the European Radio Communications Committee (ERC) for GSM use when additional spectrum is needed (network-dependent). It allows operators to transmit and receive just outside GSM's core 900 frequency band. This extension provides increased network capability.

eAAC+

Enhanced Advanced Audio Coding

EDR

Enhanced Data Rate.

EFR

Enhanced Full Rate, speech coding.

EMS

Enhanced Messaging Service. Allows the user to add simple pixel pictures and animations, sounds and melodies to a text message. The EMS 3GPP™ standard also includes text formatting.

ETSI

European Telecommunications Standards Institute.

FM

Frequency Modulation of the (radio) carrier wave.

FR

Full Rate, speech coding.

GIF

Graphics Interchange Format

GPRS

General Packet Radio Services

GSM

Global System for Mobile Communications. GSM is the world's most widely used digital mobile phone system, now operating in over 100 countries around the world, particularly in Europe and Asia-Pacific.

The GSM system family includes GSM 850, GSM 900, GSM 1800 and GSM 1900. There are different phases of roll-out for the GSM system and GSM phones are either phase 1 or phase 2 compliant.

HR

Half Rate, speech coding.

HSCSD

High Speed Circuit Switched Data

HTML

HyperText Markup Language

HTTP

HyperText Transfer Protocol

JPEG

Joint Photographer Expert Group

MIDI

Musical Instrument Digital Interface

ME

Mobile Equipment

MMI

Man-Machine Interface. See UI.

MP

Megapixel

MP3

Short for "MPEG-1 layer 3", an effective audio coding scheme.

MPEG4/MPG4

MPEG-4 extends the earlier MPEG-1 and MPEG-2 algorithms with synthesis of speech and video, fractal compression, computer visualisation and artificial intelligence-based image processing techniques.

MT

Mobile Termination

ODI

Object Distribution Indicator

OMA

Open Mobile Alliance

OTA

Over-The-Air Configuration. To provide settings for the phone by way of sending an SMS message over the network to the phone. This reduces the need for the user to configure the phone manually.

PDA

Personal Digital Assistant

PDP

Packet Data Protocol

PIM

Personal Information Management

PNG

Portable Network Graphic

RDS

Radio Data System

RSS

Really Simple Syndication

RTSP

Real Time Streaming Protocol session control.

SI

Service Indication

SL

Service Loading.

SIM card

Subscriber Identity Module card – a card that must be inserted in any GSM-based mobile phone. It contains subscriber details, security information and memory for a personal directory of numbers. The card can be a small plug-in type or credit card-sized, but both types have the same functions. The phone uses the small plug-in card.

SMS

Short Messaging Service. Allows messages of up to 160 characters to be sent and received via the network operator's message centre to a mobile phone.

SP-MIDI

SP-MIDI stands for Scalable Polyphony MIDI.

SS

Supplementary Services

SSL

Secure Socket Layer

TLS

Transport Layer Security

UI

User Interface

URL

Uniform Resource Locator.
The global address of documents and other resources on the World Wide Web.

USSD

Unstructured Supplementary Services Data

vCard

vCard automates the exchange of personal information typically found on a traditional business card, for use in applications such as Internet mail, voicemail, Web browsers, telephony applications, call centres, conferences, PIMs /PDAs, pagers, fax, office equipment and smart cards. vCard is specified by IETF.

VGA

Video Graphics Array

WAP

Wireless Application Protocol. Handheld devices, low bandwidth, binary coded, a deck/card metaphor to specify a service. A card is typically a unit of interaction with the user, that is, either presentation of information or request for information from the user. A collection of WML cards is called a deck, which usually constitutes a service.

WAP Application

A collection of WML cards, with the new context attribute set in the entry card.

WAP service

A WML application residing on a Web site.

WAV

Windows media audio.

WBMP

Wireless BitMap.
A graphic format optimized for mobile computing devices.

WML

Wireless Markup Language. A markup language used for authoring services, fulfilling the same purpose as HyperText Markup Language (HTML) does on the World Wide Web (WWW). In contrast to HTML, WML is designed to fit small handheld devices.

WMLScript

Wireless Markup Language Script can be used to enhance the functionality of a service, just as, for example, Java Script may be utilized in HTML. It makes it possible to add procedural logic and computational functions to WAP-based services.

WSP

Wireless Session Protocol

WWW

World Wide Web

XHTML

Extensible HyperText Markup Language

XML

Extensible Markup Language

Related information

Documents

- Sony Ericsson User Guide
- Sony Ericsson FAQ
- AT Command Reference Manual
- WAP 1.2 Specifications

Links

- www.sonyericsson.com/
- www.ericsson.com/mobilityworld/
- www.midi.org
- www.extendedsystems.com
- www.gsmworld.com/
- www.bluetooth.com
- www.imc.org
- www.3gpp.org
- www.irda.org
- www.etsi.fr
- www.openmobilealliance.org
- www.imc.org/pdi/
- www.w3.org/TR/xhtml-basic/
- www.java.sun.com
- www.memorystick.org/
- www.memorystick.com/

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